

WHAT IS CLAIMED IS:

Sub A2
1. A method for loading unaligned data stored in a plurality of memory locations, comprising:
loading a first part of said unaligned data into a first storage location;
rotating said first part of said unaligned data in said first storage location from a first position to a second position;
loading a second part of said unaligned data into a second storage location;
rotating said second part of said unaligned data in said second storage location from a third position to a fourth position; and
combining said first storage location with said second location using a logical operation into a result storage location.

2. The method of claim 1 wherein said first storage location is a first register, said second storage location is a second register, and said result storage location is a result register.

3. The method of claim 2 wherein said registers are 64-bits in length.

4. The method of claim 1 wherein the logical operation is a bit-wise OR operation.

5. The method of claim 1 further comprising performing an operation selected from a group consisting of masking, zero-extending, and sign extending, on said first storage location, when said first part of said unaligned data is in said second position of said first storage location.

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6. The method of claim 1 wherein said rotating is performed in two phases comprising a first phase in which a major rotation is performed and a second phase in which a minor rotation is performed.

7. A method for storing data into an unaligned plurality of memory locations, comprising:
rotating a first part of said data in a first storage location from a first position to a second position;

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5 storing said data located in second position in said unaligned plurality of
6 memory locations at an address given by a first pointer;
7 rotating a second part of said data in a second storage location from a third
8 position to a forth position; and
9 storing said data located in forth position in said unaligned plurality of
10 memory locations at an address given by a second pointer.

1 8. The method of claim 7 wherein said first pointer comprises a high
2 address and said second pointer comprises a low address.

1 9. The method of claim 8 wherein said data is stored in said unaligned
2 plurality of memory locations inclusively between said high address and said low address.

1 10. The method of claim 7 wherein said rotating is performed in two
2 phases comprising a first phase in which a major rotation is performed and a second
3 phase in which a minor rotation is performed.

1 11. The method of claim 7 wherein said first storage location is a first
2 64-bit register, said second storage location is a 64-bit second register, and said result
3 storage location is a 64-bit result register.

1 12. The method of claim 7 wherein said data is selected from a group
2 consisting of data 8, 16, 32, and 64 bits in length.

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A3

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B1

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a1